

FAYZULAYEV, B.N.

Effect of the impulse characteristic in circuits with correction
of a building-up front. Radiotekhnika 10 no.11:60-64 N '55.

(MLRA 9:3)

(Radio circuits)

24850

S/106/60/000/004/005/007
A055/A133

9.2560

AUTHOR: Fayzulayev, B. N.

TITLE: Junction processes in transistorized triggers

PERIODICAL: Elektrosvyaz', no. 4, 1960, 29 - 37

TEXT: The analysis of junction processes in transistorized triggers applies to the general case, without too many limiting assumptions. Account is namely taken of the effect exerted by the collector junction capacitance upon the dynamical parameters of the triggering circuit. The dynamical operation of triggers is examined from the point of view of stability and of the quickest possible action. Junction processes are studied in the case when the starting signals are applied to the trigger inputs alternately, and not simultaneously. The analysis is limited to the case of "strong" triggering signals, and the positive feedback effect is not taken into account. In the equivalent circuit of a junction transistor in the active region, C_k and R_k are the capacitance and resistance of the collector junction, averaged for a large signal; $\phi(p)$ is the "operator expression" ("operatornoye vyrazheniye") of the transistor transfer characteristic (for emitter and for large signal); $Z_e(p)$, r_b are the "operator impedance" ("operatornyy impedans")

Card 1/8

24850 S/106/60/000/004/005/007
A055/A133

Junction processes in transistorized triggers

and the base resistance. The common-emitter arrangement being used, the current $i_g(p)$ can be expressed as

$$i_g(p) = \beta'(p)i_b(p).$$

In the case of a resistance-capacitance load, and approximating the emitter transfer factor $\alpha(p)$ (in short-circuited load operation) by a function such as:

$$\alpha(p) = \frac{\alpha_0}{(1+p\tau_\alpha)(1+pt_0)}, \quad (3)$$

(where α_0 is the static emitter transfer factor; τ_α is the time constant equal to $\frac{1}{2\pi f_\alpha}$; f_α is the boundary frequency at which α falls to level 0.707 at large signals; t_0 is the diffusion delay nearing $0.25\tau_\alpha$ for diffusion transistors), the "operator expression" for the transfer function $\beta'(p)$ takes the form of:

$$\beta'(p) = \beta'_0 \frac{1+p\tau'_1}{(1+p\tau'_\beta)(1+p\tau_0)} \quad (4)$$

where, for $R_k \gg R_1$:

Card 2/8

Junction processes in transistorized triggers

24850

S/106/60/000/004/005/007
A055/A133

$$\beta'_0 = \frac{\beta_0}{1 + \beta_0 \frac{R_1}{R_k}} \quad (5)$$

$$\tau'_1 = R_1 (C_1 + C_k) \quad (6)$$

$$\tau'_p \approx \beta_0 [\tau_a + t_0 + R_1 (C_k + \frac{C_1}{\beta_0})] \quad (7)$$

$$\tau_0 \approx \frac{R_1 (C_1 + C_k)}{1 + \frac{R_1 (C_k + \frac{C_1}{\beta_0})}{\tau_a + t_0}} \quad (8)$$

Function $\beta'(p)$ is derived in an appendix to the article. The author states that his analysis can be carried out on the basis of a simplified equivalent circuit of the trigger. Junction processes at switching. - The generator current $i_{g1}(p)$ in transistor T_1 is:

$$i_{g1}(p) = I_k \quad (10)$$

Card 3/8

24850

S/106/60/000/004/005/007

A055/A133

Junction processes in transistorized triggers

where I_k is the static value of collector current in the open transistor. The voltage across the collector load of T_1 is:

$$u_{k1}(p) = \frac{U_o}{1+p\tau_1} \quad (11)$$

where $\tau_1 = R_1'(C_1+C_1+C_k)$; $R_1' = \frac{R_1 R_1}{R_1 + R_1}$; $U_o = I_k R_1'$. The base current of transistor

T_2 is

$$i_{b2}(p) = \frac{U_o}{R_1} \frac{1+p\tau_1}{1+p\tau_1} \quad (12)$$

where

$$\tau_1 = R_1 C_1.$$

The voltage across the collector load of T_2 is:

$$u_{k2}(p) = K_u U_o \frac{1+p\tau_1}{1+p\tau_1} \frac{1}{(1+p\tau_1)(1+p\tau_o)} \quad (13)$$

where $K_u = \beta_o \frac{R_1}{R_1}$, and where, for $C_k \gg \frac{C_o}{\beta_o}$:

Card 48

24850

S/106/60/000/004/005/007
A055/A133

Junction processes in transistorized triggers

$$\left. \begin{aligned} \tau_{\beta} &= \beta_o' [\tau_{\alpha} + t_o + R_1 (C_k + \frac{C_1}{\beta_o})] \\ \tau_o &= \frac{R_1 (C_1 + C_k + C_e)}{1 + \frac{R_1 (C_k + \frac{C_1}{\beta_o})}{\tau_{\alpha} + t_o}} \end{aligned} \right\}$$

The expression for $u_{k2}(p)$ can be simplified. Indeed, $u_{k2}(p)$ can be considered as a convolution of two functions: a slow one and a rapid one. Developing the "operator expression" of the slow component into a series, the author finds that this component can be represented, with only a very small error, by the first term of the series alone, and the simplified expression for $u_{k2}(p)$ can be written as:

$$u_{k2}(p) \approx K_u \frac{\tilde{t}_1}{\tau_{\beta}} \frac{U_o}{(1+p\tilde{t}_1)(1+p\tau_o)} \quad (16)$$

Choice of the accelerating capacitance.-- It ensues from (16) that, under transient operating conditions, the voltage across the load of the triggered triode can attain rapidly the value U_o (corresponding to the static operating conditions of the open triode) only in case of

Card 5/8

Junction processes in transistorized triggers

24850

S/106/60/000/004/005/007
A055/A133

$$\tau_1 \gg \frac{\tau_p}{K_u} \quad (17)$$

After substitutions and transformations, (17) becomes:

$$C_1 \gg \frac{\tau_p + t_0}{R_1} + C_k + \frac{C_1}{\beta_0}, \quad (18)$$

C_1 being the accelerating capacitance. The following expression is given by the author to the optimum accelerating capacitance:

$$C_{1opt} = \xi_{opt} \left(\frac{\tau_p + t_0}{R_1} + C_k + \frac{C_1}{\beta_0} \right), \quad (19)$$

where $\xi_{opt} > 1$. The coefficient ξ_{opt} , at which $t_{setup1} = t_{setup2}$, is, in the general case, somewhat superior to one, and depends on numerous parameters of the circuit. This dependence is, in fact, so complicated that it is advisable to determine ξ_{opt} experimentally, expression (18) being only used as a first approximation. Quick action of the trigger. - The quick action of the trigger is defined by the author as the reciprocal of the setup-time of the transient processes in the load:

Card 6/8

24850

S/106/60/000/004/005/007
A055/A133

Junction processes in transistorized triggers

$$F = \frac{1}{t_{\text{setup}}}.$$

Only the maximum quickness of action is examined in the article. Considering that $R_1 \ll R_1$, the author writes:

$$F_{\text{max}} = \frac{1}{\gamma R_1 (C_{1\text{opt}} + C_k)} \quad (20)$$

where γ is the coefficient of the leading edge, about equal to 2.5. Substitution into (20) of the expression for $C_{1\text{opt}}$ (19) gives:

$$F_{\text{max}} = \frac{1}{\gamma \left\{ \xi_{\text{opt}} (\tau_{\alpha} + t_o + \frac{1 + \xi_{\text{opt}}}{\xi_{\text{opt}}} R_1 C_k) \right\}} \quad (21)$$

Considering that, in the examined case, $\xi_{\text{opt}} \approx 1$, formula (21) can be given the following simplified form:

$$F_{\text{max}} \approx \frac{1}{2.5(\tau_{\alpha} + t_o + 2R_1 C_k)}. \quad (22)$$

There are 7 figures and 3 Soviet-bloc references.

Card 7/8

9.4310

77182

SOV/108-15-1-8/13

AUTHOR: Fayzulaev, B. N.

TITLE: Emitter Repeater at Impulse Operation

PERIODICAL: Radiotekhnika, 1960, Vol 15, Nr 1, pp 60-67 (USSR)

ABSTRACT: The paper analyzes the transient processes caused by large impulse signals in a repeater formed by a planar-junction transistor. The following assumptions are made: (1) the impedance of the emitter junction is neglected; (2) the reactive character of the base resistance is neglected; (3) the capacitance and resistance of the collector junction is neglected; (4) when a current impulse is applied to the base the transient characteristic of the collector current is approximated by an exponential function with the time constant τ_β ; thereby $\tau_\beta \approx (1 + \beta) \tau_\alpha$, where τ_α is the time constant of the transient characteristic of the collector current produced by a current impulse applied to the emitter; and (5) the equivalent circuit of the operating part is considered

Card 1/5

Emitter Repeater at Impulse Operation

77182

SOV/108-15-1-8/13

to be linear. The analysis is based on the equivalent circuit shown in Fig. 3.

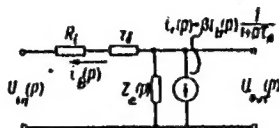


Fig. 3.

Using the Carson operational transform, expressions are given for the input impedance Z_{in} and the output impedance Z_{out}

$$z_{in}(p) = R_L + (1 + \beta) R_E \frac{1 + p \tau_E}{1 + p(\tau_E + \tau_B) + p^2 \tau_E \tau_B} \quad (7)$$

Card 2/5

Emitter Repeater at Impulse Operation

77182

SOV/108-15-1-8/13

$$z_{out}(p) = \frac{R_d}{1 + \beta + \frac{R_d}{R_e}} \frac{1 + p\tau_e}{1 + p \frac{\tau_e + \tau_\beta \left(1 + \frac{R_d}{R_e}\right)}{1 + (1 + \beta) \frac{R_d}{R_e}}} + p^2 \frac{\tau_e \tau_\beta}{1 + (1 + \beta) \frac{R_d}{R_e}} \quad (8)$$

where $\tau_e = R_e C_e$; R_e and C_e are, respectively, resistance and capacitance of the emitter load. It is stated that Z_{in} may have only an aperiodic character, whereas Z_{out} may be either aperiodic or periodic. Two expressions are derived which determine two positive values τ_{e1} and τ_{e2} of the time constant τ_e . For all τ_e between τ_{e1} and τ_{e2} the transient process is oscillatory, as illustrated in Fig. 8.

Card 3/5

Emitter Repeater at Impulse Operation

77182

SOV/108-15-1-8/13

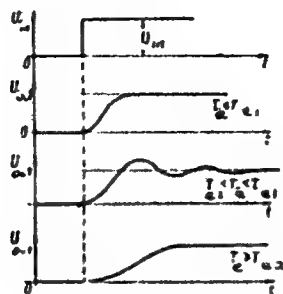


Fig. 8.

Because of the reactive character of the negative feedback, the transient process may cause an early cutoff of the repeater. The time t_{co} at which the cutoff takes place may be written as $t_{co} = \tau_B \cdot I_{bo_bco}$, where I_{bo} is the steady-state base current and I_{bco} is the cutting off input impulse current. After time t_{co} the output voltage U_{out} attains the level $U_{out\ co}$. An expression

Card 4/5

Emitter Repeater at Impulse Operation

77182

SOV/108-15-1-8/13

is given for the load capacitance C_{eco} corresponding to the early cutoff

$$C_{eco} = \frac{I_{eo}}{m} \left(1 + \frac{I_{eo}}{2I_{bco}} \right) \frac{1}{U_{out}}. \quad (22)$$

where I_{eo} is the emitter current before the cutoff and $m = U_{out} / U_{co}$. The above expression is derived from the early cutoff condition $m \leq 1/5$ to $1/10$, and it may not be used for $m > 1/5$. There are 9 figures; and 2 Soviet references.

SUBMITTED: August 25, 1958

Card 5/5

85572

S/108/60/015/007/012/013/XX
B010/B070

9.2586 (also 2303)

AUTHORS: Fayzulayev, B. N., Member of the Society,
Yanushkevich, V. I., Member of the Society

TITLE: Choice of the Optimum Static Parameters of a Trigger Circuit²⁵

PERIODICAL: Radiotekhnika, 1960, Vol. 15, No. 7, pp. 60-66

TEXT: Starting from the criterion of the steady state, specifications for the supply voltages and anode and divider resistances for bistable multivibrators with pentodes and specific sources of grid bias are given, and simple relations between the tolerances of these operational quantities and the stability of the circuit are derived. The steady state of a bistable multivibrator is characterized by two conditions of stability:
1) $U_{gk1} \geq 0$, that is, the current-carrying tube is controlled till the region of grid current; 2) $U_{gk2} \leq -|E_{g_{max}}|$, that is, the negative grid potential of the other tube is at least as large as its blocking voltage. Since U_{gk1} and U_{gk2} can be immediately determined by the supply voltages

Card 1/4

85572

Choice of the Optimum Static Parameters of
a Trigger Circuit

S/108/60/015/007/012/013/XX
B010/B070

and the divider resistances, two conditions are obtained for these operational quantities and their tolerances. The latter are included in the stabilization factor γ which is represented in practice by the following approximate expression: $\gamma \approx 2(\delta R_1 + \delta R_2 + \delta E_a + \delta E_k)$, where R_1 and R_2 are divider resistances, E_a is the working potential, E_k is the grid bias, and $\delta R_1 = \Delta R_1 / R_1$. The larger the values allowed by the two stability conditions, the larger may be the spread of the operational quantities without endangering the stability of the circuit. If E_k is

infinitely large, γ reaches the maximum value $\gamma_{\max} = \frac{S_o R'_a - 1}{S_o R_{io} + 1}$, where S_o

is the mutual conductance, R_{io} the direct-current resistance at the operating point, and R'_a the anode resistance. This equation is the key to the specifications of the circuit design; care must be taken to have

Card 2/4

85572

Choice of the Optimum Static Parameters of
a Trigger Circuit

S/108/60/015/007/012/013/XX
B010/B070

γ_{\max} as large as possible. The following rules for designing are obtained: For a large mutual conductance and a small static internal resistance the working potential is chosen to be so high that the operating point lies at $U_{gk} = 0$ at the break of the $I_a - U_a$ characteristic of the pentode. The anode resistance R'_a must not exceed the value

$R'_{a_{\min}} = \gamma R_{i0} + (1+\gamma)/S_0$, so that the switching frequency has an upper

limit. The grid bias should be chosen so large that $\gamma = 0,9 \gamma_{\max}$, from which $E_k/E_g \approx 10 (1 + 1/0,9 \gamma_{\max})$ follows, where E_g is the grid bias. For the voltage divider ratio $\beta = R_1/R_2$, a simple calculation shows that

$\beta_{\text{opt}} = \sqrt{\frac{E'_a(U_a + E_g)}{E_g(E_k - E_g)}}$, where E'_a is the anode potential of the blocked

tube, and U_a the anode potential of the opened tube. If the dynamic mutual conductance for a triode is substituted, the results may be different.
Card 3/4

85572

Choice of the Optimum Static Parameters of
a Trigger Circuit

S/108/60/015/007/012/013/XX
B010/B070

rectly applied to bistable multivibrators equipped with triodes. There are
4 figures and 2 Soviet references.

SUBMITTED: March 31, 1958 (initially), July 10, 1959 (after revision)

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Card 4/4

L 12467-63

8/108/63/018/004/008/008

44

AUTHOR: Fayzulayev, B.N., Active Member of Society

TITLE: Coupling of parameters for transient characteristics of a transistor

PERIODICAL: Radiotekhnika, v. 18, no. 4, 1963, 63-70

TEXT: One of the basic parameters of a transistor is the transient characteristic of the transfer coefficient $\alpha(t)$. Theoretical calculation of this transient characteristic and of accessory parameters is complex and cumbersome. Elucidation of the connection between time parameters of transient characteristics is not only of theoretical, but also of practical importance in schemes including the transistor (base, emitter, collector). The coupling of parameters for the transient characteristic of the transistor conforming to base $\beta(t)$ with the parameters for the transient characteristic conforming to emitter $\alpha(t)$ in a general case is determined. It is shown

Card 1/2

L 12467-63

S/108/63/018/004/008/008

Coupling of parameters...

that the sharpness of the transient characteristic $\beta(t)$ and, correspondingly, the quick action of the transistor in a scheme with a common emitter determine the area of distortion of a transient characteristic $\alpha(t)$. Several typical examples illustrating the fundamental conclusions are examined. There are 4 figures and 5 foreign language references.

SUBMITTED: April 27, 1962

Card 2/2

FAYZULAYEV, Boris Nurulayevich; MAMONKIN, I.G., retsenezent;
SHUTSKOY, K.A., otv. red.; KONDRAT'YEVA, V.P., red.

[Transistorized stages in the transient mode of operation] Poluprovodnikovye kaskady v perekhodnom rezhime.
Moskva, Sviaz', 1965. 182 p. (MIRA 18:5)

L 29304-66 ENT(1)
ACC NR: AF6012341

SOURCE CODE: UR/0108/66/021/004/0056/0061

AUTHOR: Levin, V. K. (Active member); Fayzulayev, B. N. (Active member)

ORG: Scientific-Technical Society of Radio Engineering and Electric Communication
im. A. S. Popov (Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi)

TITLE: Analysis of the transmission of pulse signals in a chain of uniform shaping stages

SOURCE: Radiotekhnika, v. 21, no. 4, 1966, 56-61

TOPIC TAGS: pulse shaper, pulse signal, digital decoder, logic circuit

ABSTRACT: The authors analyze the successive shaping of a pulse passing through a chain of identical nonlinear switching stages of the diode-logic (NOT-OR, etc.) with binary output. The principal consideration in design is to see to it that the signal after passing through a long chain of such stages does not attenuate, does not increase above a certain limit, and retains stable temporal parameters (front, duration, delay). The analysis is based on the introduction of the concept of an asymptotic signal which is established in the long chain as the number of elements increases without limit. This concept can be applied to pulse signals of short duration as well as to pulse fronts. In the former case one speaks of asymptotic

Card 1/2

UDC: 621.374.31

L 29304-66

ACC NR: AP6012341

duration, fron, or amplitude of the signal, and in the latter of asymptotic front and fall-off amplitude. Conditions for the existence of an asymptotic signal and its parameters are determined, and the duration and delay of the front of an asymptotic signal are calculated. The amplitude, duration, delay, and front of the asymptotic signal are determined for several typical circuits. Applications of the results to the analysis of operation of complicated digital devices are discussed. Orig. art. has: 7 figures and 9 formulas.

SUB CODE: 09/ SUBM DATE: 02Mar64/ ORIG REF: 005

Card 2/2

BK

FAYZULDAYEV, K., CAND BIO SCI, "BIOLOGY AND ECOLOGY OF SPECIES OF THE GENUS ILEDITSCHIA L. UNDER THE CONDITIONS OF UZBEKISTAN." TASHKENT, 1961. (ACAD SCI UZSSR. BOTANICAL GARDEN). (KL-DV, 11-61, 215).

FAYZULDAYEV, K.F.

Introducing species of the genus *Gleditschia* L. Uzb. biol. zhur.
no.2:17-21 '61. (MIRA 1415)

1. Botanicheskiy sad AN UzSSR.
(HONEY LOCUST)

POPOV, A.A., insh.; ~~FAYZULIN, A.M., insh.~~; MALININ, V.A., insh.;
CHEREPANOV, N.R., insh.; ~~SHALAYEV, V.V., insh.~~

Improving boring and blasting operations in open pits. Varyv.
dale no.51/8:143-149 '63. (MIRA 16:6)

(Boring) (Blasting)

FAYZULIN, P.G.

White greater gerbils. Priroda 53 no. 12:70 '64. (MIRA 18:1)

1. Uspek'skiy nauchno-issledovatel'skiy institut eksperimental'noy meditsinskoy parazitologii i gel'mintologii, Samarkand.

FAYZULIN, M., buril'shchik

Improve the design of Sormovo hoists. Bezop. truda v prom.
2 no.7:37 J1 '58. (MIRA 11:9)

1. Tsakh kapital'nogo remonta skvashin neftepromyslovogo
upravleniya Tuymasanef'.
(Oil fields--Equipment and supplies)

FAYZULIN, M.F., inzh.; MATSYNIN, V.I., inzh.; KLIMOV, Yu.N.

Manufacture of prestressed channel slabs. Bet. 1 shel. bet. 8
no.2:71-73 F '62. (MIRA 16:5)
(Concrete slabs)

STATSENKO, G.P.; FAYZULIN, M.I.; KIRAKOZOVA, N.Sh., red.;
MAMONTOVA, N.N., tekhn. red.

[Industrial hygiene and accident prevention in the organiza-
tions and enterprises of state commerce and public dining]
Okhrana truda i tekhnika bezopasnosti v organizatsiakh i
predpriyatiyakh gosudarstvennoi trgovli i obshchestvennogo
pitaniya; sbornik materialov. Moskva, Gostorgizdat, 1962.
311 p. (MIRA 15:9)

(Restaurants, lunchrooms, etc.--Hygienic aspects)
(Commerce--Hygienic aspects) (Accidents--Prevention)

FAYZULIN, N.K., tekhnik-marksheyder

Surveys of upraise mining operations by theodolite
equipped with a reflecting attachment. Gor.shur. no.8:
74-76 Ag '60. (MIRA 13:8)
(Mine surveying) (Theodolites)

FAVSHILAYEV, A. M., Card Med Sci--(circ.) "Dynamics of blood proteins
in ~~multiple~~ sclerosis." Mos, 1953. 12 pp (First in order of Lenin's 60th
Inst in I. I. Sachinov), 200 copies

-131-

FAYZULLAYEV, A.Kh.

Multiple sclerosis in Tajikistan. Zdrav.Tadzh. 9 no.5:32-34 '62.
(MIRA 15:12)

1. Iz kafedry nervnykh bolezney (ispolnyayushchiy obyazannosti
zaveduyushchego - kand.med.nauk Ye.N.Kutchak) Tadjhikskogo
meditsinskogo instituta imeni Abuali ibni Sino.
(TAJIKISTAN--MULTIPLE SCLEROSIS)

FAZULLAYEV, D.F.

Poiseuille's problem for interpenetrating motion of two-phase
media. izv. AN Uz.SSR. Ser. tekhn. nauk no. 3:61-74 '58.

(MIRA 11:8)

1. Tashkentskiy institut inzhenerov irrigatsii i mekhanizatsii
sel'skogo khozyaystva.

(Hydrodynamics)

FAYZULLAYEV, D.F.

Generalizing Poiseuille's formula for the case of circular annular pipes and two-phase media. Izv. AN Uz. SSR. Ser. tekhn. nauk no.5: 35-39 '58. (MIRA 11:12)

1. Tashkentkiy institut irrigatsii i mekhanizatsii sel'skogo khozyaystva.

(Fluid dynamics)

FAYZULLAYEV, D.F.

Problems of steady circular motion of viscous noncompressible
two-phase media. Izv.AN Uz.SSR.Ser.tekh.nauk no.3:57-67 '59.
(MIRA 12:7)

1. Tashkentskiy institut inzhenerov irrigatsii i mekhanizatsii
sel'skogo khozyaystva.
(Fluid dynamics)

FAYZULLAYEV, D. F., Cand Phys-Math Sci (diss) -- "Stabilized movements of incompressible two-phase media". Tashkent, 1960. 19 pp (Central Asia State U im V. I. Lenin), 200 copies (KL, No 11, 1960, 129)

S/167/61/000/006/002/003
D299/D303

AUTHOR: Fayzullayev, D.F.

TITLE: On the steady flow of incompressible two-phase media between parallel walls

PERIODICAL: Akademiya nauk UzSSR. Izvestiya. Seriya tekhnicheskikh nauk, no. 6, 1961, 20-27

TEXT: The change in the velocity of flow is considered for arbitrary cross-sections of plane tubes. It was shown by the author in an earlier work (Ref. 2; Izv. AS UzSSR, ser. tekhn. nauk, 1958, no. 3), that if, in an infinite plane tube, the reduced densities are assumed as constant, then the velocity of flow is a function of the flow parameters and of the y-coordinate. In the following, the notations of Ref. 2 (Op.cit.) are adopted. The x-axis is directed along the tube axis, and the y-axis is normal to it; the flow is assumed as rectilinear, parallel to the x-axis. The equations of motion and the continuity equations are set up. The parameters ρ_{10} , ρ_{20} (the reduced densities) and the velocities $u_{10}(y)$, ✓

Card 1/4

On the steady flow ...

S/167/61/000/006/002/003

D299/D303

$u_2(y)$ of the media are given; the expressions for these velocities were
 u_0 derived in Ref. 2(Op.cit.). The obtained system of equations (under the
given boundary conditions) is solved by means of the Laplace-Karson trans-
form. From the formulas obtained it follows that the change in the velo-
city of the components is directly proportional to the values of the
initial velocities and inversely proportional to the initial values of the
space components, whereby an increase in the velocity of one component
leads to a decrease in the velocity of the other component. The final
expressions for the velocities are ✓

Card 2/4

S/167/61/000/006/002/003

D299/D303

On the steady flow ...

$$u_1 = u_{10}(y) - \frac{r}{c} \left(1 - \frac{\text{ch } \sqrt{c} y}{\text{ch } \sqrt{c} h} \right) + \sum_{m=1}^{\infty} \frac{2(\gamma_m + r) \cos \frac{2m+1}{2} \cdot \frac{\pi}{h} y}{\frac{2m+1}{2} \pi (b - 2a\gamma_m) h \gamma_m} \times$$

$$\times e^{\gamma_m x} (-1)^{m+1}, \quad (34)$$

$$u_2 = u_{20}(y) - \frac{p_{10}}{p_{11}} \cdot \frac{p_{21}}{p_{20}} \cdot \frac{u_{20}(y)}{u_{10}(y)} \left\{ -\frac{r}{c} \left(1 - \frac{\text{ch } \sqrt{c} y}{\text{ch } \sqrt{c} h} \right) + \right.$$

$$\left. + \sum_{m=1}^{\infty} \frac{2(\gamma_m + r) \cos \frac{2m+1}{2} \cdot \frac{\pi}{h} y}{\frac{2m+1}{2} \pi (b - 2a\gamma_m) h \gamma_m} e^{\gamma_m x} (-1)^{m+1} \right\}. \quad (35)$$

; with $x \rightarrow \infty$,
one obtains Eqs.
(36)(37),

$$u_1 = u_{10}(y) - \frac{r}{c} \left(1 - \frac{\text{ch } \sqrt{c} y}{\text{ch } \sqrt{c} h} \right); \quad (36)$$

$$u_2 = u_{20}(y) + \frac{p_{10}}{p_{11}} \cdot \frac{p_{21}}{p_{20}} \cdot \frac{u_{20}(y)}{u_{10}(y)} \cdot \frac{r}{c} \left(1 - \frac{\text{ch } \sqrt{c} y}{\text{ch } \sqrt{c} h} \right). \quad (37)$$

Card 3/4

On the steady flow \dot{p} .

S/167/61/000/006/002/003
D299/D303

(r and s are given by formulas). Hence at infinity the velocities of the media are distributed along curves, expressed by cosine hyperb.; the second terms in expressions (36) and (37) are corrections to the velocity distributions. It is noted that with equal initial velocities, the first terms of Eqs. (36) and (37) give coinciding parabolas, and the second terms vanish. From Eqs. (36) and (37) it follows that the velocities u_1 and u_2 tend to different functions. If the parameters of one medium equal the corresponding parameters of the other, then the flow under consideration is incompressible fluid-flow and the parabolic initial-velocity distribution remains constant. There are 2 figures and 5 Soviet-bloc references.

ASSOCIATION: Institut mekhaniki An UzSSR (Institute of Mechanics of the AS Uzbekskaya SSR)

SUBMITTED: September 16, 1960

Card 4/4

L0061

S/166/62/000/003/009/010
B163/B104

24.2.80
AUTHORS:

Kotov, Ya. P., Umarov, G. Ya., Fayzullayev, D. F.

TITLE:

On the stationary flow of a conducting medium in presence of a magnetic field

PERIODICAL:

Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 3, 1962, 75 - 80

TEXT: The system of hydrodynamic equations for the motion of multiphase media is generalized for the case where one of the media is conducting. The special case of two incompressible fluids in a magnetic field is treated, one of which is conducting and the other not. For this purpose, an additional electromagnetic term is introduced into the equation of motion for the conducting fluid and the Maxwell equations are brought into the system. As an example, the stationary one-dimensional flow of a conducting and of a non-conducting fluid between two parallel plates and subject to a magnetic field perpendicular to them is studied. Equations for the velocity and field distribution in this flow are derived. The conducting fluid is decelerated in the magnetic field and its velocity may become smaller than
Card 1/2

On the stationary flow ...

S/166/62/000/003/009/010
B163/B104

that of the non-conducting fluid, even if the conducting fluid is less viscous.

ASSOCIATION: Fiziko-tehnicheskiy institut AN UzSSR (Physicotechnical Institute of the AS UzSSR)

SUBMITTED: September 19, 1961

Card 2/2

24.4300

S/167/62/007/004/001/002
D234/D308

AUTHORS:

Umarov, A.I., and Fayzullayev, D.F.

TITLE:

Mutually penetrating motion of incompressible
viscous two-phase media in a circular cylindrical pipe

PERIODICAL:

Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya
tekhnicheskikh nauk, no. 4, 1962, 45 - 56

TEXT:

The authors quote the differential equations of
Kh.A. Rakhmatulin for stabilized motion of media as above, in cylindrical coordinates. The motion of the media is assumed to be rectilinear and parallel to the axis of the pipe (Oz axis). The equations are linearized by neglecting several small terms, and then solved by applying Laplace transformation. Expressions for the velocities and densities of the two media are obtained in terms of cylindrical functions. A formula for the pressure drop along the pipe is derived. Two particular cases are considered as examples and illustrated with

Card 1/2

FAYZULLAYEV, D.F., MARKABULOV, O.

Theory of the flow of two-phase media in the space between
heaters (pipe stills). Izv.AN Uz.SSR.Ser.tekh.nauk 7 no.2:
27-33 '63. (MIRA 16:4)

1. Institut mekhaniki AN UzSSR.
(Fluid dynamics)

FAYZULLAYEV, D.F.

Hydraulic transportation of finely granular materials of different
size. Izv. AN Uz. SSR. Ser. tekhn. nauk 9 no.2:23-31 '65.

(MIRA 18:8)

1. Institut mekhaniki i Vychislitel'nyy tsentr AN UzSSR.

UMAROV, G.Ya.; FAYZULLAYEV, D.F.; NAZARIY, M.P.; ALIMOV, A.K.

Shape of the surfaces of paraboloid mirrors made by the
rotation technique. Geliotekhnika no.6:12-18 '65.

(MIRA 19:1)

1. Fiziko-tekhnicheskiy institut AN UzSSR.

L 36353-66 EWT(m)/EWP(j) IJP(c) RM

ACC NR: AP6017580

(A)

SOURCE CODE: UR/0377/65/000/006/0012/0018

AUTHOR: Umarov, G. Ya. (Candidate of physico-mathematical sciences); Fayzullayev, D.F.; Nazariv, M. P.; Alimov, A. K.
 ORG: Physicotechnical Institute, AN UzSSR (Fiziko-tekhnicheskii institut AN UzSSR)

TITLE: Study of the surface shape of paraboloid mirrors obtained by a spinning method

SOURCE: Gellotekhnika, no. 6, 1965, 12-18

TOPIC TAGS: solar furnace, solar power plant, heat reflection, parabolic body, epoxy plastic

ABSTRACT: The article deals with paraboloid reflectors made of synthetic resins by a spinning method that requires no expensive equipment or polishing. In view of the fact that shrinkage of the resin causes changes in the shape of the reflector and modifies its focusing ability, the authors analyze in detail the ultimate shape assumed by a paraboloid of revolution formed by solidification of a liquid during its rotation. To this end, they determined the form of a free surface and the interface between the two components when a heavy incompressible two-phase liquid poured in a spherical vessel rotates like a rigid body together with the sphere at constant angular velocity about a vertical axis passing through the center of the sphere. An equation is derived for the ultimate shape assumed by the solidified liquid. The results were tested by measuring the surface of epoxy resin mixed with plastifier and solidifier and made to solidify over a surface of rotating mercury. The surface of contact between the resin and the mercury turned out to be ideally smooth, while the

Card 1/2

L 36353-66

ACC NR: AP6017580

quality of the concave surface of the paraboloid was somewhat worse than that of the convex surface. It was impossible to make the concave surface as smooth as the convex one. The experimental focal distance agreed well with the calculated one. It is concluded that rotation of a two-layer liquid makes it possible to prepare optically accurate high-temperature solar concentrators of arbitrary diameter without appreciable loss of material. Orig. art. has: 2 figures and 17 formulas.

SUB CODE: ⁰⁹13/ SUBM DATE: 078sep65/ ORIG REF: 001/ OTH REF: 005

Cord 2/2 *LS*

ATAKHODZHAYEV, A.K.; FAYZULLAYEV, Sh.F.; OSMANOV, S.A.

Orientational relaxation times of molecules of certain
disubstituted benzenes and their determination by the
light diffusion method. Izv. AN Uz. SSR.Ser.fiz.-mat.nauk
7 no. 6:86-90 '63. (MIRA 17:6)

1. Samarkandskiy gosudarstvennyy universitet.

ATAKHOLSHAYEV, A.K.; FAYZULIYEV, SH.F.; OLMIKOV, G.A.; SABIROV, L.M.

Spectroscopic determination of the orientational relaxation
times of disubstituted benzenes in solution. Vest. LGU 19
no.16:15-17 '64.

(MIRA 17:11)

ATAKHODZHAYEV, A.K.; FAYZULLAYEV, Sh.F.; OSMANOV, S.A.

Effect of temperature on the rotary mobility of molecules of the isomers
cresol and toluidine. Ukr. fiz. zhur. 9 no.5:555-559 My '64.

(MIRA 17:9)

1. Samarkandskiy gosudarstvennyy universitet.

— USSR/Cultivated Plants. Fodder Plants.

M

Abs Jour : Ref Zhur-Biol., No 15, 1958, 68248

Author : Fayzullin, A.
Inst : Bashkir Experiment Station of Animal Husbandry.
Title : The Effect of Phosphorous Fertilizers on Seed
Productivity of Sudan Grass.

Orig Pub : S. kh. Bashkirii, 1957, No 6, 19-21

Abstract : The results of experiments in applying P_c under Sudan grass grown from seed are given. The experiments were conducted in 1955-1956 on the field of the Bashkir Experiment Station of Animal Husbandry. As one centner/hectare of P_c were added during spring harrowing, and 0.5 centners/hectare were added to the rows at planting, panicle formation was accelerated

Card : 1/2

97

SIMIS, B.S., student; FAYZULLIN, A.A., student; KIVALKINA, V.P., dotsent,
nauchnyy rukovoditel'.

Comparative study of the antimicrobial properties of propolis
ointments. Uch. zap. KVI 89:177-181 '62.

(MIRA 18:8)

1. Kafedra mikrobiologii (zav. - doktor veterin. nauk Kh.Kh.Abdullin)
Kazanskogo veterinarnogo instituta.

DOBRUNOV, L.G.; PAKHOMOVA, L.M.; FAYZULLIN, A.D.

.Control of sugar beet growth and maturation under conditions of a shorter vegetation period. Fiziol. rast. 9 no.3:379-384 '62.
(MIRA 15:11)

1. Institute of Biology of Bashkirian Affiliate of U.S.S.R. Academy of Sciences, Ufa.

(Bashkiria—Sugar beets)

FAYZULLIN, M.Kh.; FAYZULLIN, A.M.

X-ray diagnosis of retention cysts of the frontal sinuses. Vest.
rent. i rad. 37 no.2:29-32 Mr-Apr '62. (MIRA 15:4)

1. Iz pervoy kafedry rentgenologii i radiologii (zav. - prof.
M.Kh. Fayzullin) Kazanskogo instituta usovershenstvovaniya vrachey
imeni V.I.Lenina otolaringologii (zav. - prof. N.N.Lozanov)
Kazanskogo gosudarstvennogo meditsinskogo instituta.
(FRONTAL SINUS--RADIOGRAPHY) (CYSTS)

FAYZULLIN, A.M.

X-ray diagnosis of adenoids. Vest. rent. 1 rad. 40 no.1;
70-71 Ja-F '65. (MIRA 18:6)

1. Gorodskaya bol'nitsa No.6 (glavnyy vrach Ye.V. Khmelevtseva),
Kazan'.

FAYZULLIN, A.M., gornyy inzh.

Results of open-pit use of combination charges of "igdanits"
and ordinary explosives with air spaces. Gor. zhur. no.7:34--
38 J1 '63. (MIRA 16:8)

FAYZULLIN, A.M., gornyy inzh.

Drifting without excessive breaking of rock. Gor. zhur. no.9:
69-70 S '63. (MIRA 16:10)

SHAPIRO, P.I., gornyy inzh.; FAYZULLIN, A.M., gornyy inzh.

Results of using igdanite in underground mining operations.
Gor. zhur. no.8:39-42 Ag '64. (MIRA 17:10)

MALININ, V.A., gornyy inzh.; FAYZULLIN, I.M., gornyy inzh.

Using igdanite, charges with air space, and combination
charging of boreholes. Vzryv. delo no.54/11:282-291 '64.
(MIRA 17:9)

PAYZULLAN, A.M., : 1955. 1954.

Experimental blasting using water-containing mixtures of
trotyl with ammonium nitrate. Vopr. dal. no. 54/11, 369.
355 '54. (MIRA 17:9)

FAYZULLIN, A.M., inzh.; PODKOPAYEV, P.A., inzh.; ANDREYEV, E.K., inzh.

Pneumatic ejector charger for charging holes with igdanite. Gor.zhur.
no.1:45-47 Ja '65. (MIRA 18:3)

FAYZULLIN, A.M., inzh.; PODKOPAYEV, P.A., inzh.; ANDREYEV, E.K., inzh.

Compressed air charger for charging boreholes and blastholes.
Shakht.stroi. 9 no.4:24-26 Ap '65.

(MIRA 18:5)

PUDOVIK, A.N.; MOSHKINA, T.M.; KRUPNOV, G.P.; BUKIN, A.I.; SEMENOVA, L.A.;
Prinimali uchastnye: KOSTYUKOVA, L.A. laborant; PETROVA, M.G.,
laborant; TEMIRBAYEV, A.M., inzh.; FAIZULLIN, A.Yu., inzh.; POLOZOVA,
L.P., laborant; NAZAROVSKAYA, G.V., laborant

Synthesis and study of organophosphorus plasticizers for the tri-
acetate film bases. Trudy NIKFI no.46:17-25 '62.

(MIRA 18:8)

PUDOVIK, A.N.; FAYZULLIN, E.M.

Reactions of phosphorus acid chlorides with glycerol epichlorohydrin
and glycidol ethers. Zhur. ob. khim. 32 no.1:231-237 Ja '62.
(MIRA 15:2)

1. Kazanskiy gosudarstvennyy universitet.
(Phosphorus acids) (Glycerol) (Ether)

PUDOVIK, A.N.; FAYZULLIN, E.M.

Mechanism of reactions of phosphorus acid chlorides with oxides
of alkenes and dienes. Zhur. ob. khim. 34 no. 3:882-889 Mr '64.
(MIRA 17:6)

1. Kazanskiy gosudarstvennyy universitet im. V.I.Ul'yanova-
Lenina.

L 17954-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM
ACCESSION NR: AP5002569 S/0079/64/034/007/2471/2472

AUTHOR: Pudovik, A. N.; Fayzullin, E. M.; Mukhametzhanova, E. Kh.

TITLE: Reactions of diglycide ether with dialkylphosphorus acid chlorides

SOURCE: Zhurnal obshchey khimii, v. 37, no. 7, 1964, 2471-2472

TOPIC TAGS: ether, phosphorus acid, chloride, ester, sulfur

Abstract: In the reaction of diglycide ether with chlorides of phosphorus acids, the oxide ring opens on the side of the primary carbon atom, forming beta-chloro-beta'-glycidylisopropyldialkyl esters of phosphorous acid. Sulfur was added to one of the products -- be a-chloro-beta'-glycidylisopropyldiethyl ester of phosphorous acid, producing the beta-chloro-beta'-glycidylisopropyldiethyl ester of thiophosphoric acid. In the reaction of diglycide ether with two moles of the chloride of diethylphosphorous acid, addition occurred at both oxide rings, forming tetraethyl-alpha, alpha'-dichloromethyldiethylene glycol diphosphate. Orig. art. has 2 formulas and 1 table.

Card 1/2

L 17980-65

ACCESSION NR: AP4047047

SUBMITTED: 23 Aug 63

NO REF SOV: 000

ENCL: 00

SUB CODE: GC, MT

OTHER: 000

Card 2/2

PUDOVIK, A.N. .; FAYZULLIN, E.M.; ZHURAVLEV, G.I.

Mechanism and order of addition of phosphorus trichloride and
other phosphoryl chlorides to propylene oxide. Dokl. AN SSSR
165 no.3:586-589 N '65. (MIRA 18:11)

1. Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-
Lenina. 2. Chlen-korrespondent AN SSSR (for Pudovik).

L 26577-66 EWT(m)/EPF(n)-2/EWP(j) RM/JD

ACC NR: AP6016977

SOURCE CODE: UR/0020/65/165/003/0586/0589

AUTHOR: Pudovik, A. N. (Corresponding member AN SSSR); Fayzullin, E. M.; Zhuravlev, G. I.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet).

TITLE: Mechanism and order of addition of phosphorus trichloride and other chlorides of phosphorus acids to propylene oxide

SOURCE: AN SSSR. Doklady, v. 165, no. 3, 1965, 586-589

TOPIC TAGS: phosphorus chloride, ester, tertiary amine, hydrolysis, IR spectrum, phosphorous acid, hydrogen chloride

ABSTRACT: New evidence confirming the proposed mechanism of the reactions of phosphorus trichloride and chlorides of incomplete esters of phosphorous acids with alpha-olefins (through preliminary opening of the oxide ring by hydrogen chloride) was obtained in an investigation of the reaction of propylene oxide with phosphorus trichloride and the chloride of dibutylphosphorous acid. The reactions proceeded readily when the reagents, were combined. However, when a small amount of triethylamine was added to the reaction mixtures, these reactions did not take place. If anhydrous propylene oxide was added to the dibutylphosphorous acid chloride, freshly distilled under vacuum, and protected from moisture, no reaction between them was observed. The introduction of

Card 1/2

L 26577-66

ACC NR: AP6016977

atmospheric air containing moisture into the reaction volume of the addition of one to two drops of water to the reaction mixture gave rise to a vigorous reaction. The authors conclude that the first step in the reactions considered is a partial hydrolysis of the acid chlorides and interaction of the hydrogen chloride thereby formed with the alpha-oxide. The oxonium ion formed upon addition of a proton to the oxide then either directly reacts with the chloride ion, to form propylene glycol chlorohydrin, which then reacts with the acid chloride, or perhaps simultaneously with the chloride ion, molecules of the chlorohydrin are involved in the reaction. When the chlorine atoms are replaced by alkoxyl groups, the basicity of the phosphorus atom decreases, which facilitates the reactions of the acid chloride with the oxide. A mixed ester of phosphorous acid is formed, and hydrogen chloride is regenerated. The reaction of propylene oxide with phosphorus trichloride was conducted in ether solution with cooling, at ratios of 1:1, 2:1, and 3:1; the dichloride of beta-chloroisopropylphosphorous acid, and tri-beta-chloroisopropyl phosphite were obtained in good yields. The presence of a secondary alcohol group in the investigated chlorohydrin was corroborated by the infrared spectra and chemical investigations. Orig. art. has: 1 figure and 1 table. [JPRS]

SUB CODE: 07 / SUBM DATE: 10Mar65 / ORIG REF: 004 / OTH REF: 002

Card 2/2

L 31270-66 EWT(m)/EWF(j) RM

ACC NR: AP6022802

SOURCE CODE: UR/0079/66/036/002/0310/0314

AUTHOR: Pudovik, A. N.; Fayzullin, E. M.; Zhukov, V. P.

ORG: Kazan' State University (Kazanskiy gosudarstvennyy universitet)

TITLE: Cyclic esters of unsaturated phosphinic acids

SOURCE: Zhurnal obshchey khimii, v. 36, no. 2, 1966, 310-314

TOPIC TAGS: esterification, cyclic group, organic phosphorus compound, chlorinated organic compound, isomerization, molecular structure, chemical decomposition, phosphinic acid

ABSTRACT: A series of alkylene glycol-beta-chloroalkyl esters of phosphorus acid were prepared in high yields by the action of chlorides of alkylene glycolphosphorous acids on ethylene oxide, propylene oxide, and glycerol epichlorohydrin. The cyclic esters of phosphorous acid added sulfur when heated to 100-110°, being converted to esters of thiophosphoric acid. Thermal isomerization (180-200°) of alkylene glycol-beta-chloroalkyl esters of phosphorous acid yielded alkylene glycol esters of beta-chloroalkylphosphinic acids. An Arbusov rearrangement also occurred upon heating of the cyclic phosphites with alkyl halides. Treatment of the alkylene glycol esters of beta-chloroalkylphosphinic acids with triethylamine in benzene solution with heating resulted in splitting off hydrogen chloride, and formation of alkylene glycol esters of vinyl- and propenylphosphinic acids. Orig. art. has: 3 tables. [JPRS]

SUB CODE: 07 / SUBM DATE: 08Mar65 / ORIG REF: 005

Card 1/1

UDC: 547.26'118

L 64847-67 LWP(1), PWT(2) 24

ACC NR: AP7000240

SOURCE CODE: UR/0079/66/036/004/0718/0724

AUTHOR: Pudovik, A. N.; Fayzullin, E. M.; Zhuravlev, G. I.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Reactions of alpha-oxides with dialkyldithiophosphoric¹ and dithiophosphinic acids

Moscow, Zhurnal Obshchey Khimii, Vol 36, No 4, 1966, pp 718-724

Abstract: The addition of dialkyldithiophosphoric and diphenyldithiophosphinic acids to nonsymmetrical alpha-oxides of olefins, e.g. glycerin epichlorohydrin, propylene, divinyl, styrene, and glycidol oxides, was studied. The reactions proceed readily without catalysts and are accompanied by a substantial thermal effect. Conclusions on the structure of the addition products and the order of addition of dithioacids to alpha-oxides (in accord with the Markovnikov rule) were drawn on the basis of a study of the chemical properties and infrared spectra of the products. The acid esters of dithiophosphoric and diphenyldithiophosphinic acids were found to be electrophilic in reactions with alpha-oxides, the reactions proceeding with preliminary formation of intermediate oxonium compounds. In the reaction of ethyleneglycol chlorohydrin, 2,3-propyleneglycol chlorohydrin, and

Card 1/2

UDC: 547.261.118

0923 0778

L 04347-67

ACC NR: AF7000240

glycerin dichlorohydrin with the potassium salt of diethyldithiophosphoric acid, the corresponding ethyl esters of O,S-alkyleneglycoldithiophosphoric acid were obtained. Orig. art. has: 1 table. [JPRS: 37,177]

TOPIC TAGS: IR spectrum, organic phosphorus compound, ester

SUB CODE: 07 / SUBM DATE: 12 Apr 65 / ORIG REF: 005 / OTH REF: 002

Card 2/2

ACC NR: AP7003661

SOURCE CODE: UR/0079/66/036/003/1454/1459

AUTHOR: Pudovik, A. N.; Fayzullin, E. M.; Zhuravlov, G. I.

ORG: Kazan' State University im. V. I. Ul'yanov-Lenin (Kazanskiy gosudarstvennyy universitet)

TITLE: Reactions of olefin oxides with phosphorus oxychloride and diethyl chlorophosphate

SOURCE: Zhurnal obshchey khimii v. 36, no. 8, 1966, 1454-1459

TOPIC TAGS: ethylene oxide, organic oxide, organic phosphorus compound

ABSTRACT: It was found that phosphorus oxychloride and diethyl chlorophosphate are readily added to alpha-oxides of olefins in the presence of small quantities of water or hydrochloric acid. The olefin oxides tested were ethylene oxide, propylene oxide, and glycerin epichlorohydrin. The reaction was refractory or did not proceed at all in the absence of traces of water or hydrochloric acid. A reaction scheme involving the formation of an oxonium intermediate, which is then converted to a glycol chlorohydrin, is proposed. In the reaction of phosphorus oxychloride with propylene oxide, opening of the oxide ring occurs on the side of the primary carbon atom. When the olefin oxides are treated with phosphorus oxychloride in 1:1, 2:1, and 3:1 ratios in the presence of a small amount of hydrogen chloride, monochlorides, dichlorides, and complete esters of the corresponding beta-chloroalkylphosphoric acids are obtained. A series of dialkyl-beta-chloroalkyl esters of phosphoric acid were obtained by the reactions of dichlorides of beta-chloroalkylphosphoric acids with alcohols.

Orig. art. has: 2 tables. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 03Jul65 / ORIG REF: 003

Card 1/1 jb.

UDC: 547.71

0926 0284

6

On the Question of the Influence of Colloids on Cathode Polarization.
Electrodeposition of Nickel in the Presence of Paul's Mixture. G. S. Vozvish-
henkiy and P. P. Faizulin (Zhurnal Fizicheskoy Khimii (J. Phys. Chem.), 1936,
8, (3), 472-476).—[In Russian.] Under conditions precluding a change in the
solution potential of nickel anodes, it was shown that maximum polarization
is obtained at a definite concentration of colloid in the electrolyte due to
changes in the concentration of active nickel ions.—N. A.

ABB. 11.8 OPTICAL LITERATURE CLASSIFICATION

CLASSIFICATION

CLASSIFICATION

FAYZULLIN, F.F.

USSR.

Effect of addition of organic substances on anodic polarization of Zn. F. F. Fayzullin, I. P. Penderova, and N. N. Murtazova. *Otkrytyye Zapiski Kazan. Gosudarst. Univ.* 112, No. 4, 117-23 (1953); *Referat. Zhur. Khim.* 1954, No. 17889.—Saturated solns. of camphor, aniline, and octyl alc. increased the anodic and cathodic polarization of Zn in 1.5*N* ZnSO₄ (pH 5.5). Phenol, hydroquinone, and pyrogallol had a similar effect on anodic polarization of Zn, this effect increasing with increasing concn. At small concn. of these addns. the cathodic polarization of Zn was in some cases lower. In a zincate electrolyte (ZnO 6 and NaOH 12 g./l.) at pH 13.2, the anodic polarization of the Zn electrode was 17 mv. at 8×10^{-3} amp./sq. cm. and increased by only 5 mv. in the presence of these org. substances and urea. These results could be explained in accordance with the Loshkarev theory (Loshkarev, *et al.*, *C.A.* 34, 12557) by the formation on the Zn electrode of adsorbed films of the org. substances which blocked the hydration of Zn ions entering the soln. and the discharge of Zn⁺⁺ on the cathode. In ZnSO₄ soln. these films were quite strong, while in a zincate soln. strong films were not formed.

M. Hosh

FAYZULLIN, F. F.

✓ Physicochemical analysis of the system phosphorus trichloride-benzaldehyde. I. Density and viscosity of the system. N. A. Trifonov and F. F. Fayzullin. *Uchenye Zapiski Kazan. Gosudarst. Univ.* 112, No. 4, 131-8 (1953); *Referat. Zhur., Khim.* 1954, No. 14265. — The system $\text{PCl}_3\text{-C}_6\text{H}_5\text{CHO}$ was studied to det. whether the 2 components combine to form $\text{PCl}_3\text{C}_6\text{H}_5\text{CHO}$ (Conant and Wallingford (cl. C.A. 18, 1997)) or $\text{PCl}_3\text{C}_6\text{H}_5\text{CHO}$, as contended by Kibachnik and Rossitskaya (C.A. 42, 2876a, 7241f). The d. and the viscosity of 13 mixts. were measured at 25 and 50°. The d. isotherms are bent toward the axis of compn. The curves of the deviation of the d. isotherms from additive straight lines have a max. that corresponds to a compn. with 75 mol. % of benzaldehyde. The viscosity isotherms have clearly expressed irrational-type maxima; at 25° the max. corresponds to 75 mol. % $\text{C}_6\text{H}_5\text{CHO}$ and at 50° to 78 mol. %. The max. on the curve of the temp. coeff. of viscosity also corresponds to 75 mol. % $\text{C}_6\text{H}_5\text{CHO}$. Thus, the exptl. results indicate the compd. formed is $\text{PCl}_3\text{-3C}_6\text{H}_5\text{CHO}$. II. Index of refraction and surface tension. F. F. Fayzullin and N. A. Trifonov. *Uchenye Zapiski Kazan. Gosudarst. Univ.* 112, No. 4, 139-43; *Referat. Zhur., Khim.* 1954, No. 14266. — The index of refraction n_D^{25} was measured at 25 and 50°. The isotherm n_D^{25} has a max. corresponding to 75 mol. % and the isotherm n_D^{50} to 72.2 mol. % $\text{C}_6\text{H}_5\text{CHO}$. The surface tension was detd. at the same temps. and the deviations of these isotherms from the iso-

therms constructed according to the Stakhorski formula $\sigma = \sigma_1[\sigma_2(1-x) + \sigma_1x]$, were computed (σ_1 and σ_2 are the surface tension of the components of the system, and σ is the surface tension of the soln. contg. x mols. of the 1st component). The isotherms obtained in this investigation had maxima corresponding to 77.8 mol. % at 25° and to 75 mol. % of $\text{C}_6\text{H}_5\text{CHO}$ at 50°. Max. deviation of experimentally obtained isotherms from the S. isotherms correspond to a soln. contg. 75 mol. % $\text{C}_6\text{H}_5\text{CHO}$. The exptl. data indicate the formation of $\text{PCl}_3\text{3C}_6\text{H}_5\text{CHO}$. III. Electrical conductivity and fusibility of the system. *Uchenye Zapiski Kazan. Gosudarst. Univ.* 112, No. 4, 145-50; *Referat. Zhur., Khim.* 1954, No. 14267. — The elec. cond. was detd. at 25 and 50°. The cond. isotherms had 2 max. at 25 and 95 mol. % and a min. at 75 mol. % $\text{C}_6\text{H}_5\text{CHO}$; this indicates the formation of an only slightly dissolved compd., $\text{PCl}_3\text{3C}_6\text{H}_5\text{CHO}$. The fusibility of the system was studied with a Kurnakov pyrometer. Since the soln. crystd. poorly, only the heating thermograms were recorded. The fusion curve has 3 eutectics, -104.4, -66.5, and -74.4°, corresponding to 10, 55, and 90 mol. % of $\text{C}_6\text{H}_5\text{CHO}$ and 2 dystectics at -64 and -7.5°, corresponding to 50 and 75 mol. % $\text{C}_6\text{H}_5\text{CHO}$. The 1st of these is not very clear and does not indicate with any certainty formation of $\text{PCl}_3\text{C}_6\text{H}_5\text{CHO}$. The 2nd dystectic clearly indicates the formation of $\text{PCl}_3\text{3C}_6\text{H}_5\text{CHO}$. Thus, all the properties studied, d., viscosity, n , surface tension, elec. cond., and fusibility, agree and prove the formation of $\text{PCl}_3\text{3C}_6\text{H}_5\text{CHO}$.
M. Hosh.

FAYZULIN, F.F.

7

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CH New electrolyte for electropolishing aluminum alloys of the AMTs type. F. F. Fayzulin, V. A. Vokresenski, and M. M. Godneva. *Ucheye Zapiski Kazan. Univ.* 113, No. 8, 41-4 (1953); *Referat. Zhur., Khim.* 1954, No. 50347. — The suggested electrolyte contained 4 g. CrO_3 per 100 ml. of 85% H_2SO_4 . Best results were obtained at an anodic c.d. of 8-12 amp./sq. dm., 85-100°, and a time of 4-5 min. At a c.d. above 12 amp./sq. dm. there was strong surface etching. The electrolyte had good depolarizing properties. M. Hosh

D. / [Signature]

FAYZULLIN, F.F.

Physicochemical analysis of the system phosphorus tri-
bromide-benzaldehyde. F. F. Fayzullin, L. S. Drabkina,
and L. I. Ivankina. *Uchenye Zapiski Kazan. Univ.* 113,
No. 8, 51-8 (1963); *Referat. Zhur., Khim.* 1954, No. 3742.
-- Density, viscosity, surface tension, and α were studied for
the system $\text{PBr}_3\text{-BzH}$. The d. (at 30 and 50°) isotherms
were curves bent toward the compn. axis which indicates
contraction in the system. Deviation of the property curves
from additive straight lines was noted, as well as deviations
of the surface-tension curves from the Stakhorski additive
curve. In all cases it corresponded to a compn. of 75 mol. %
 BzH . Thus, on consideration of shape of d., viscosity, sur-
face tension, and α isotherms it is concluded that the compd.
 PBr_3BzH is formed. M. Hosh

Kafedra Fizicheskoy Khimii.
(Phosphorus Bromides) (Benzaldehyde)

FAYZULLIN, F.P.; TSYPIN, M.A.

Reply to the remark of V.IA. Anosov regarding our article
"Physicochemical analysis of the system tribromo phosphorus
tribromide-benzaldehyde in benzene." Uch. zap. Kas. un. 113
no.8:129-130 '53. (MLRA 10:5)
(Phosphorus bromides) (Benzaldehyde) (Anosov, V.IA.)

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4, 38

Effect of orientation on the anodic behavior of zinc in some electrolyte solutions. B. P. Fairclough, L. K. Jankovskaya, and N. N. Muzugova. *Doklady Akad. Nauk SSSR*, 1979, 256, No. 3, 605 (607) (Engl. transl. *Chem. Abstr.*, 1979, 89, 256). Abstr. No. 6496. The effect of orientation on the anodic dissolution and oxidation, and the anodic polarization of oriented and nonoriented electrolytic Zn deposits in $ZnSO_4$, $Zn(OAc)_2$, and $ZnCl_2$ is studied. In the absence of polarization, the two types are almost identical. The anodic dissolution of Zn (II) with axis of orientation (100) polarizes less than nonoriented Zn (II). At $i = 5$ mA/cm², the polarization of II suggests that it has a lower Zn^{2+} concentration in $Zn(OAc)_2$ and $ZnCl_2$ than in $ZnSO_4$. The anodic dissolution of Zn samples in the same solution is studied by continuous weighing (cf. preceding abstr.). It is established that I has greater anodic solubility than II. The speed of anodic dissolution of Zn is studied during anodic dissolution at $i = 0.05$ and 0.1 mA/cm². It is shown that the anodic dissolution of Zn is faster in $ZnSO_4$ than in $Zn(OAc)_2$ and $ZnCl_2$.

FAYZULLIN, F.F. (Kazan')

Kinetics of anodic oxidation of copper and electronographic analysis
of the oxide film structure. Uch.zap.Kaz.un. 115 no.10:52-54 '55.
(MLRA 10:5

(Copper)
(Oxidation, Electrolytic)

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FAYZULLIN, F.F.

B-12

USSR/ Physical Chemistry - Electrochemistry

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11358

Author : Fayzullin F.F., Muzurova N.N.

Inst : Kazan University

Title : Potentiographic Investigation of Anodic Oxidation of Copper in NaOH Solutions

Orig Pub : Uch. zap. Kazanskogo un-ta, 1956, 116, No 1, 154-157

Abstract : By means of a potentiograph (RZhKhim, 1957, 12280) potential-time curves were recorded during anodic polarization of Cu-electrodes at 0.8 and 1.6 a/dm² in 3, 4 and 6N NaOH at 50, 60 and 70°. Potential-time curves show three stops of potential; in the opinion of the authors 1-st stop corresponds to formation of Na₂CuO₂ with subsequent deposition of CuO at the anode, 2-nd, short stop to adsorption of electrochemically active oxygen by oxide layer, and 3-rd to evolution of O₂.

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FAYZULLIN, F. F.

B-12

Category: USSR / Physical Chemistry - Electrochemistry

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30141

Author : Fayzullin F. F., Mazurova N. N.

Inst : Kazan University

Title : Potentiographic Study of Cathodic Reduction of Oxide Films on Copper.

Orig Pub: Uch. zap. Kazansk. un-ta, 1956, 116, No 5, 73-76

Abstract: In continuing the previously published work (RZhKhim, 1957, 11358) a study was made, by the method of the potential versus time (φ , τ) curves, of cathodic reduction of the anodically formed oxide films on Cu, in 20% NaOH, at $i = 0.4 \text{ a/dm}^2$ and 80° . It was found that in the case of cathodic reduction of the black oxide film the (φ , τ) curves show two prolonged φ stops (-0.13 and -0.32 v), and two short φ stops (-0.50 and -0.74 v), which occur before evolution of hydrogen. In the opinion of the authors the first two stops correspond to the reduction of CuO to Cu O and of Cu O to Cu, which is confirmed by the nature of the (φ , τ) curves of cathodic

Card : 1/2

-11-

Category: USSR / Physical Chemistry - Electrochemistry

B-12

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30142

Author : Kolotiy A.A., Delimarskiy Yu. K.

Inst : not given

Title : Electrochemical Separation of Binary Lead-Copper and Lead-Silver Alloys in Fused Electrolyte

Orig Pub: Ukr. khim. zh., 1956, 22, No 4, 466

Abstract: In continuation of previously published work (RZhKhim, 1956, 42832) a study was made, for the purpose of refining Pb from Cu and Ag, of the electro lysis of fused eutectic mixture $PbCl_2$ -KCl-NaCl at different current density i . As anode were utilized the binary alloys Pb-Ag (0.05 - 10 at. % Ag) and Pb-Cu (0.05 - 5 at. % Cu). Cathode and anode metals were held in refractory test tubes with lateral openings. The electrolyte was contained in a porcelain crucible. It was found that with increase of Cu and Ag content of the anode metal by 10 times the amount of admixtures in the cathode metal increases, respectively, by 10 and 4 times. On increase of i at the

Card : 1/2

-13-

Category: USSR / Physical Chemistry - Electrochemistry

B-12

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30141

reduction of anodic Cu O films. The two short stops are correlated by the authors with adsorption of hydrogen prior to evolution of molecular hydrogen at the Cu-cathode at $\varphi = -0.88$ v.

Card : 2/2

-12-

FAYZULLIN, F. F.

FAYZULLIN, F. F.

Category: USSR / Physical Chemistry - Electrochemistry

B-12

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30129

Author : Fayzullin F. F., Yuldasheva L. K.

Inst : Kazan University

Title : Study of Anodic Behavior of Zinc in Alkaline Solutions

Orig Pub: Uch. zap. Kazanskogo un-ta, 1956, 116, No 5, 82-85

Abstract: By the method of automatic recording of the (φ , t) curves (RZhKhim, 1957, 12280) a study was made of anodic polarization of Zn in 0.25, 0.5 and 1 N NaOH at 40 and 60° and $i = 6 \text{ a/dm}^2$. On application of the current the potential of Zn rises sharply and evolution of O_2 begins. Oxidation is attended by periodical, very rapid, potential changes, caused by periodical breakdown and formation of oxide film. By the gravimetric method a determination was made of the rate of formation of oxide film on Zn at i of 6 and 12 a/dm^2 ; an increase of i increases rate of formation of the film. On increase of the temperature there takes place a decrease in overvoltage of O_2 evolution, which results in an increased rate of formation of the oxidic film.

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-6-

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SOV/137-58-9-19565

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 205 (USSR)

AUTHORS: Fayzullin, F.F., Kochman, E.D.

TITLE: Oscillographic Investigation of Anodic Behavior of Copper in NaOH Solutions (Ostsillograficheskoye issledovaniye anodnogo povedeniya medi v rastvorakh NaOH)

PERIODICAL: Uch. zap. Kazansk. un-ta, 1957, Vol 117, Nr 2, pp 158-162

ABSTRACT: An investigation of supplementary data permitting the reproduction of the mechanism of the oxidation of Cu in NaOH solutions and the establishment of the stages of the process. Oscillograms were obtained during the anodic polarization of Cu in 1N and 10N NaOH at 25, 45, and 65°C. The electrodes were prepared by the deposition of Cu on Pt wire. It is established that the primary product on the surface of Cu in NaOH, without stirring, is Cu_2O ; in dilute solutions at low temperatures a layer of $\text{Cu}(\text{OH})_2$ forms on top of the layer of Cu_2O ; at 45° and above some CuO is formed; in concentrated NaOH at 25°, Cu_2O is covered with a layer of $\text{Cu}(\text{OH})_2$, and CuO is formed only in small amounts; at elevated temperature, CuO alone is formed.

Card 1/1 A possible mechanism of the process is offered. V.G.
1. Electrodes--Preparation 2. Copper--Polarization 3. Sodium hydroxides
--Performance 4. Copper oxide

SOV/137-58-9-19567

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 206 (USSR)

AUTHORS: Dezider'yeva, I.P., Fayzullin, E.F.

TITLE: Anodic Oxidation of Nickel in Solution of Sodium Hydroxide at Low Current Densities (Anodnoye okisleniye nikelya v rastvorakh yedkogo natra pri nizkikh plotnostyakh toka)

PERIODICAL: Uch. zap. Kazansk. un-ta, 1957, Vol 117, Nr 2, pp 166-169

ABSTRACT: The effect of the anode cd, the concentration of the alkali, and the temperature on anodic oxidation of Ni in NaOH solutions at low anode cd's was studied by means of the automatic recording of potential-time curves. The anodes were prepared from electrolytic or rolled Ni or from Cu plates electrolytically covered with a layer of Ni in the usual nickel-plating bath. Anodic oxidation was studied in 0.01N, 0.1N, and 1N solutions of NaOH at 25, 50, and 100°C. Anode cd= 15, 45, 100, and 200 $\mu\text{a}/\text{cm}^2$. On the basis of the analysis of the adduced experimental curves the conclusion is drawn that the formation of Ni oxides on the anode occurs through the oxidation of its surface with nascent O, forming upon the discharge of the OH^- ions.

Card 1/1

1. Anodes--Preparation 2. Anodes--Oxidation 3. Nickel
--Performance 4. Sodium hydroxides 5. Electrolytes--Applications V.G.